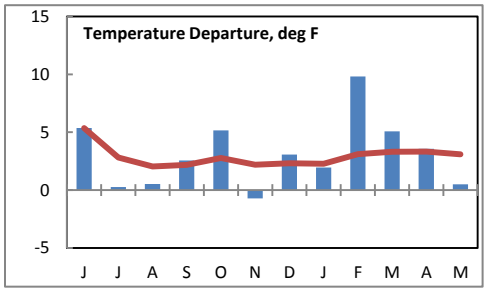
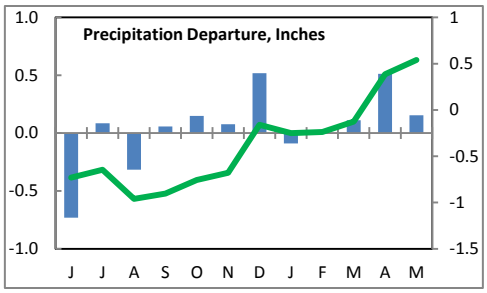
Montana Weather/Precipitation Summary

May 2016 NOAA's National Weather Service Great Falls Montana

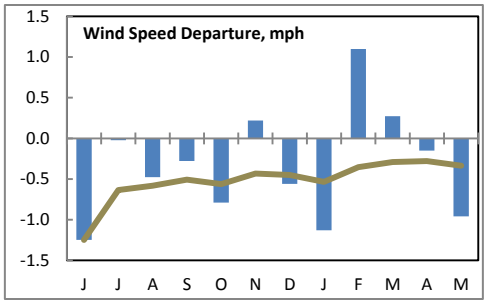
During May, general westerly flow aloft prevailed, which is normal for the month (Fig. 1). Temperatures were near normal. Precipitation was mostly above normal, except in the southeast. May's winds were slightly below the long-term average.

Statewide composite temperatures averaged 0.5°F above normal for the month. The red line on the graph to the right shows the cumulative 12-month departure from normal. The temperature anomalies ranged from -2.7°F at Joliet to +2.4°F at Wolf Point (Fig. 2). The warmest average monthly temperature was 59.3°F at Glendive, and the coolest was 37.0°F at Yellowmule (Gallatin). This was the 64th coolest May. For the past 12-months, the statewide composite average temperature is 3.1°F above normal. Ten of the last 12 months and 18 of the past 24 months have had warmer than normal temperatures.

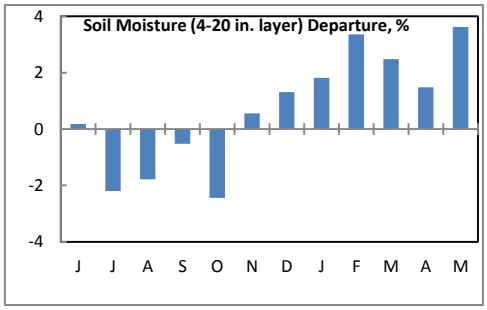




The monthly departure from normal for precipitation across Montana is shown in Figure 3. Below normal precipitation values were over the southeast and scattered portions of central and southwest Montana. The highest amount recorded was 10.30-inches at Stahl Peak (Lincoln) and at Crystal Lake (Fergus), 7.60-inches. Statewide, this month averaged 2.39", or 0.15" above normal. The statewide composite precipitation for the past 12 months is 0.54" above normal. The green line on the graph to the right shows the cumulative 12-month departure from normal. Nine of the past 12 months have measured above normal precipitation.



The statewide average winds were lighter than normal in May, ranking as the 7th calmest May of record. The statewide composite average was 8.7 mph, 1.0-mph below normal. The brown line of the graph to the right shows the 12-month cumulative statewide wind departure from normal. The 12-month average is running 0.3-mph below average. Only three of the past 12 months have had above normal average speeds. The fastest average speed was 13.3 mph at Comertown. The fastest measured gust of the month, 83-mph, occurred during a thunderstorm at Bluff Creek (Valley).



Composite statewide soil moisture is above normal for May. The average of 27.2-percent is 3.6 points above the 20 year average of 23.6-percent. This is the second highest value of record for May, exceeded only by May 2011.

Refer to NEIC's State of the Climate report for the latest monthly discussion:
http://www.ncdc.noaa.gov/sotc/

May 1-8

Generally warm and dry conditions prevailed in early May. In general, dry and warm conditions prevailed during this period. The warmest temperatures of the month occurred on the 4th and 5th, reaching 91°F at several locations in the northeast on the 5th.

May 9-20
A large storm system moved across the state on the 9th and 10th. It brought heavy rain to many sections, including heavy snow to higher elevations of central Montana. Rainfall amounts exceeding three inches were reported in the Forsyth and Hysham areas. A large area of more than two inches fell from Miles City to Melstone, to Hogeland and back to Glasgow. One and one-half feet of snow fell in the Crazys and 23-inches east of Lewistown. Flooding began over parts of central and south central Montana on the 11th, as a result of the heavy precipitation. The coldest temperature in the state was reported at Deer Lodge on the 10th, when they recorded 15°F

May 21-31
The last ten days of May started out with below normal temperautres and areas of heavy precipitation. Thunderstorms across central and eastern Montana produced some severe weather. Hail up to 2-inches in diameter was reported at Shepherd (Yellowstone), while large hail was also reported in Billings. Wind gusts reached 83 mph at the Bluff Creek RAWS (Valley) during a thunderstorm. Heavy rain, with amounts exceeding six-inches, fell over western Montana from the 21st through 24th. Coram reported about 6.50". Flooding resulted from this rainfall over northwestern Montana. After a short, quiet period, a severe thunderstorm produced a 59 mph wind gust at Baker on the 30th.

Precipitation/convection

Severe convective weather occurred on two days in May. The normal for the state is five days.

Water Year
The temperature was 37.0°F or 3.6°F above normal. This has been the warmest water year since 2000 and the 6th warmest of record.
The composite precipitation was 10.20-inches, 1.46" inches above normal. This was the 17th wettest water year to date, and the wettest since 2011.
Composite snowfall was 38.2" or 17.4" below normal. This 15th lightest snowfall of record, in the water year to date. This is the lightest amount since 1992.
Winds averaged 9.0 mph, the 14th calmest of record, and 0.2 mph below normal.

Spring period (March-May)
The average temperature was 45.7°F or 3.0°F above normal. This has been the warmest such period since 1994 and the 12th warmest of record.
The composite precipitation was 5.46-inches, 0.79" inches above normal. This was the 20th wettest water year to date, and the wettest since 2013.
Composite snowfall was 5.7" or 10.3" below normal. This is the 4th lightest snowfall of record for this period.
Winds averaged 9.4 mph, the 18th calmest of record, and 0.2 mph below normal.

May summary information:

High Temperature	91°F at Culbertson, Medicine Lake and Plentywood (5th)	**Greatest Precip**	7.73" at Hungry Horse Dam
Low Temperature	15°F at Deer Lodge (10th) and Flattop Mtn (12th)		10.30" Stahl Peak SNOTEL
Warmest Ave Temp	59.3°F at Glendive	**Peak Wind Gust**	83 mph at Bluff Creek RAWS (21st)
Coolest Ave Temp	37.1°F at Yellowmule		
Range of Temp departures	-2.7°F at Joliet to +2.4° at Wolf Point	**Highest Ave Wind**	13.3 mph at Comertown
21 city mean monthly Temperature/Normal	52.5/52.0F 0.5F above normal. 64th coolest of record (since 1880). 48th percentile. Oct-May 37.0/33.4 3.6F above normal. 6th warmest of record.	**20 city mean monthly wind speed/Normal**	8.7 mph/9.7 mph; 7th calmest of record (since 1936). 11th percentile. Oct-May 9.0 mph/9.2 0.2-mph below normal. 14th calmest of record.
22 city mean monthly precipitation/Normal	2.39"/2.24" – 107% of normal. 44th wettest of record (since 1880). 68th percentile. Oct-May 10.20"/8.74" - 1.46" above normal. 17th wettest of record.		

Historical Rank of Precipitation (inches)
for the Current Month and Water Year to Date

Location	May	% of Norm	Rank	Pcntl	Oct 1 – May 31	% of norm	Rank	Pcntl	Years
Baker	2.02	128%			7.08	127%			18
Billings	2.04	82%	41	34	7.85	83%	50	43	115
Belgrade	2.51	102%	27	33	7.75	93%	36	45	79
Butte	1.45	70%	65	52	6.27	92%	66	54	122
Cut Bank	2.19	112%	31	28	6.77	146%	14	12	109
Dillon	1.68	87%	37	47	5.48	102%	26	33	76
Glasgow	4.46	232%	9	7	11.19	208%	3	2	116
Great Falls	2.04	84%	62	49	11.12	144%	10	7	124
Havre	3.48	200%	14	10	9.82	191%	4	2	136
Helena	1.45	78%	67	48	4.82	85%	103	75	137
Jordan	1.45	63%			9.35	157%			18
Kalispell	3.12	158%	12	9	12.34	116%	18	14	122
Lewistown	3.98	140%	25	20	9.88	113%	36	29	120
Livingston	2.63	99%	48	42	9.32	108%	38	34	111
Miles City	2.43	111%	46	33	9.12	145%	22	15	139
Missoula	1.82	90%	51	36	8.49	97%	66	49	135
Mullan Pass	3.32	124%	22	28	40.99	131%	9	11	75
Wolf Point	1.97	111%			6.92	133%			18
Glendive	2.22	100%	42	34	7.00	105%	37	31	116
Sidney	2.10	103%	51	66	7.97	121%	16	20	76
BZN-MSU	2.16	68%	85	60	12.17	99%	40	29	137

Rankings and Percentiles are 1=driest, higher numbers=wetter.
For an automated version of this chart, updated daily, go to
http://www.wrh.noaa.gov/tfx/dx.php?wfo=tfx&type=&loc=products&fx=PCPNTOTALS

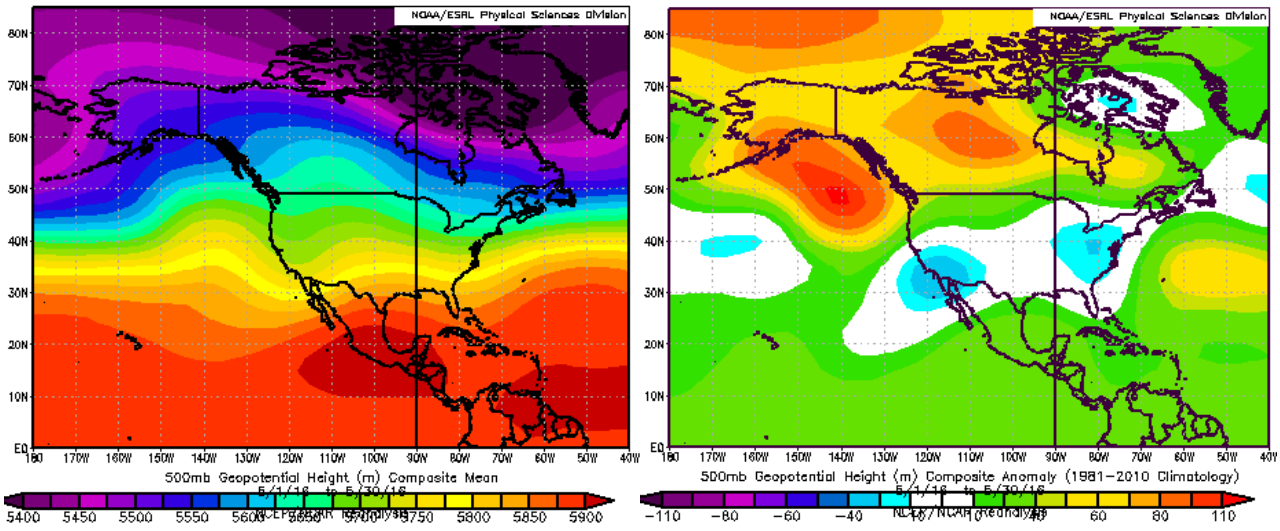


Figure 1. Mean flow at 500 millibars (~18,000 ft) for this month (left) and departure from normal (right).

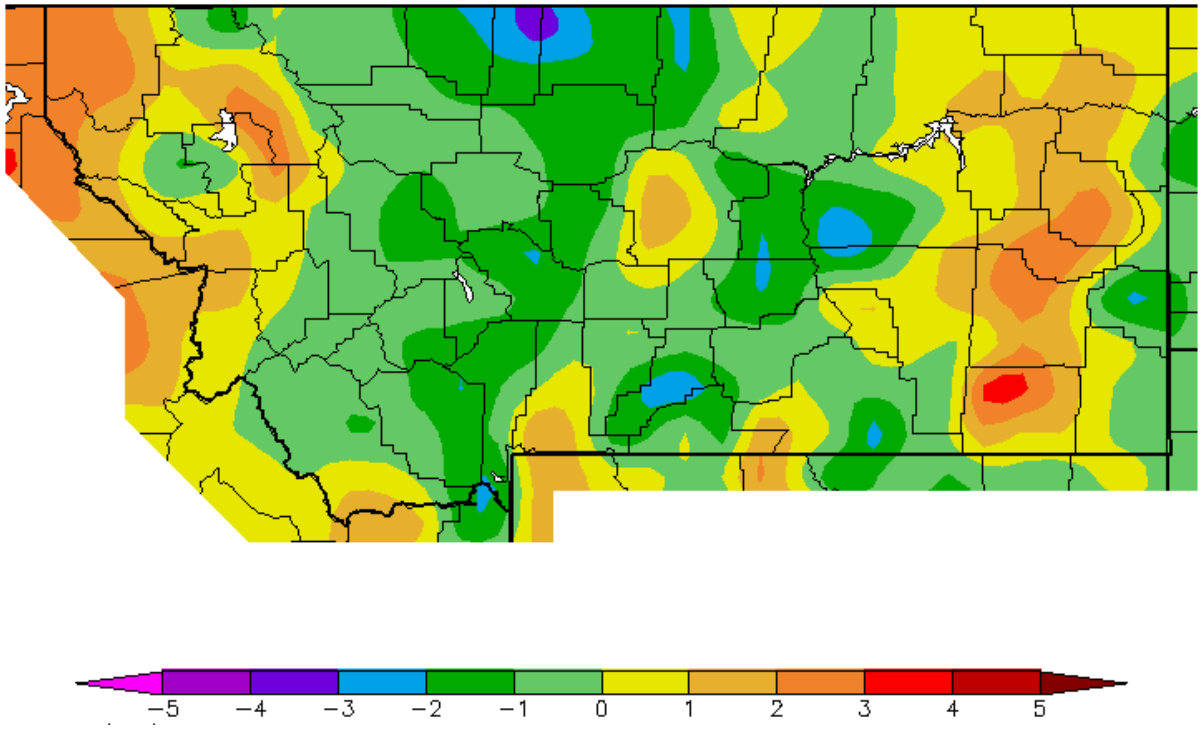


Figure 2. May 2016 temperature departures from normal (°F) (Western Region Climate Center).

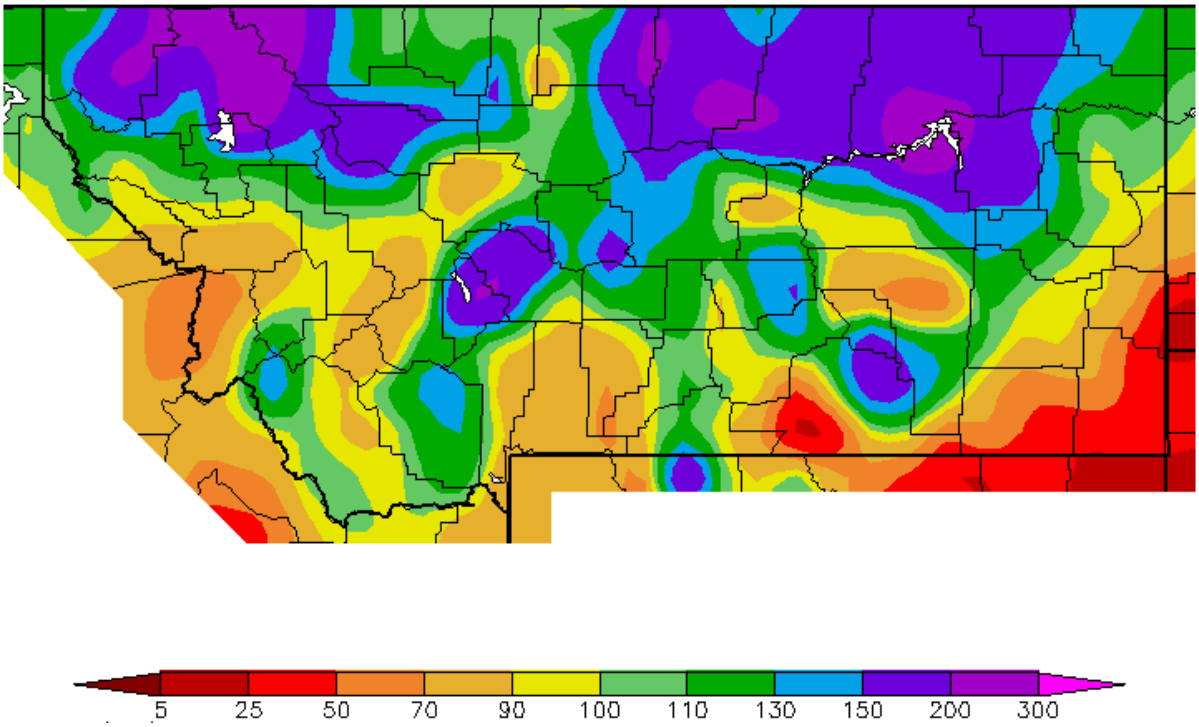


Figure 3. May 2016 precipitation departures from normal (percent) (Western Region Climate Center).

For a state map of % of normal water year precipitation (updated around the 7th of each month), go to: http://www.wrh.noaa.gov/tfx/climate/monthlysum/climatesum.php?wfo=tfx

For the latest information on mountain snowpack from the NRCS, go to: http://www3.wcc.nrcs.usda.gov/snow/index.html

For the latest U.S. Drought Monitor, issued weekly by the National Drought Mitigation Center, USDA and NOAA, go to: http://droughtmonitor.unl.edu/

These data are preliminary and have not undergone final QC by NEIC. Therefore, these data are subject to revision. Final and certified climate data can be access at the National Environmental Information Center (NEIC) http://www.ncdc.noaa.gov. Many more links are on the Drought Information Page of the NWS Great Falls web site at http://www.wrh.noaa.gov/tfx/main/drought.php?wfo=tfx. The climatological record for normals is 1981-2010. The ranking period for temperature, precipitation and snowfall is since 1880. The ranking period for wind speeds is since 1936. The ranking period for soil moisture is since 1995.